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Intellectual Property Law

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PLEASE DIRECT CORRESPONDENCE TO OUR WARRENTON OFFICE

FACSIMILE TRANSMISSION COVER SHEET

DATE: March 20, 2006

TO: Attention: Mr. Lewis
Decisions & Certificates of Corrections Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RE: U.S. Patent No. 6,939,566 B2
U.S. Patent Application No. 09/761,561
For: MICROBICIDAL FORMULATIONS AND METHODS
TO CONTROL MICROORGANISMS
Our Ref: 3731-002

FROM: Luke A. Kilyk, Esq. 

FAC. TEL. NO.: 1-703-308-6672

NUMBER OF PAGES (INCLUDING THIS COVER SHEET): 14

Items Attached: Request for Cert. of Correction & Form PTO-1050 (filed 9/28/05) -- 3 pages
Copy of U.S.P.T.O. date-stamped postcard -- 1 page
Copy of Postcard from U.S.P.T.O. mailed 10/6/05 -- 1 page
Letter in Response to the Request for Cert. of Correction w/attachments (filed 11/18/05) -- 7 pages
Copy of U.S.P.T.O. date-stamped postcard -- 1 page

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office, Fax No. 1-703-308-6672 on March 20, 2006.

Kim Blum
Name (Print)


Signature

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Date: September 28, 2005 I hereby certify that, on the date indicated above, I deposited this paper with identified attachments and/or fee with the U.S. Postal Service and that it was addressed for delivery to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 by "First Class Mail" service.

Kim Blum
Name (Print)


Signature

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Batarseh et al.	)	Examiner:	Frank I. Choi
)		
Patent No.:	6,939,566 B2	)	Group Art Unit:	1616
)		
Application No.:	09/761,561	)	Confirmation No.:	5927
)		
Filed:	January 17, 2001	)	Customer No.:	33432
)		
Docket No.:	3731-002)		

For: MICROBICIDAL FORMULATIONS AND METHODS TO CONTROL MICROORGANISMS

REQUEST FOR CERTIFICATE OF CORRECTION

Commissioner for Patents
Attention: Certificate of Corrections
P.O. Box 1450
Alexandria, VA 22313-1450

September 28, 2005

Sir:

The undersigned requests that a Certificate of Correction be issued for the above-identified patent as indicated on the attached Form PTO-1050.

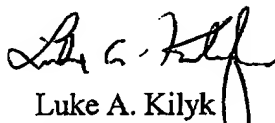
This request is being made in order to correct typographical errors as noted in the attached Form PTO-1050. It is respectfully submitted that no new matter has been added.

Since these errors are the fault of the United States Patent and Trademark Office, it is respectfully submitted that no fee is required for this request. However, if there are any fees due in connection with this filing, please charge our Deposit Account No. 50-0925.

Request for Certificate of Correction
U.S. Patent No. 6,939,566 B2
U.S. Patent Application No. 09/761,561

Respectfully submitted,

KILYK & BOWERSOX, P.L.L.C.



Luke A. Kilyk
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Enclosure: Form PTO-1050

PTO/SB/44 (02-01)

Approved for use through 01/31/2004. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

(Also Form PTO-1050)

**UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION**

PATENT NO : US 6,939,566 B2
DATED : September 6, 2005
INVENTOR(S) : BATARSEH et al.

It is certified that errors appear in the above-identified patent and that said Letters Patent
is hereby corrected as shown below:

ON THE COVER:

(63) "PCT/US00/10665, filed on Apr. 20, 1999." should read -- PCT/US00/10665, filed on Apr. 19, 2000.--

IN THE SPECIFICATION:

Column 1, line 12, "Apr. 20, 1999" should read --Apr. 19, 2000--.

MAILING ADDRESS OF SENDER:
KILYK & BOWERSOX, P.L.L.C.
Luke A. Kilyk
400 Holiday Court, Suite 102
Warrenton, Virginia 20186

PATENT NO US 6,939,566 B2

No. of additional copies



Burden Hour Statement: This form is estimated to take 1.0 hour to complete. Time will vary depending upon the needs of the individual case. Any comment on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: September 28, 2005 I hereby certify that, on the date indicated above, I deposited this paper with identified attachments and/or fee with the U.S. Postal Service and that it was addressed for delivery to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 by "First Class Mail" service.

Kim Blum
Name (Print)


Signature

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KILYK & BOWERSOX, P.L.L.C.

U.S. Patent No. 6,939,566 B2

U.S. Pat. Appln. No.: 09/761,561

Filed: January 17, 2001

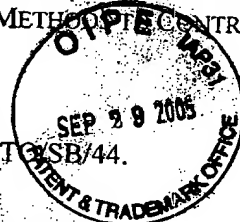
Docket No. 3731-002

Applicant: BATARSEH et al.

Entitled: MICROBICIDAL FORMULATIONS AND METHODS FOR CONTROLLING
MICROORGANISMS

Papers filed herewith on: September 28, 2005

Request for Certificate of Correction and Form PTX/44.



VIA FIRST CLASS MAIL

COMMISSIONER OF PATENTS

Receipt is hereby acknowledged of the papers filed as indicated in
connection with the above-identified case

LAK/llb

Docketed

Due Date _____

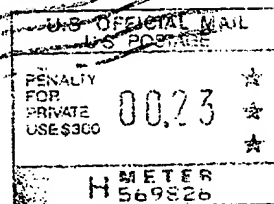
Dkt No 3731-002

By JMB

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KILYK & BOWERSOX, P.L.L.C.

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231



A request for a Certificate of Correction has
been received for U.S. Patent 6939566

LUKE A. KILYK
KILYK & BOWERSOX, P.L.L.C.
400 HOLIDAY COURT, STE. 102
WARRENTON, VIRGINIA 20186

**Docketed**

Due Date _____

Dkt No 3731-002By DMB

Date: November 18, 2005 I hereby certify that, on the date indicated above, I deposited this paper with identified attachments and/or fee with the U.S. Postal Service and that it was addressed for delivery to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 by "First Class Mail" service.

Kim Blum
Name (Print)

Kim Blum
Signature

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Batarseh et al.	)	Examiner:	Frank I. Choi
)		
Patent No.:	6,939,566 B2	)	Group Art Unit:	1616
)		
Application No.:	09/761,561	)	Confirmation No.:	5927
)		
Filed:	January 17, 2001	)	Customer No.:	33432
)		
Docket No.:	3731-002)		

For: MICROBICIDAL FORMULATIONS AND METHODS TO CONTROL MICROORGANISMS

**LETTER IN RESPONSE TO THE REQUEST
FOR CERTIFICATE OF CORRECTION**

Commissioner for Patents
Attention: Decisions & Certificates of Correction Branch
P.O. Box 1450
Alexandria, VA 22313-1450

November 18, 2005

Sir:

In response to the U.S. Patent and Trademark Office Communication received on October 17, 2005, the applicant responds as follows.

In the U.S. Patent and Trademark Office Communication, the U.S. Patent and Trademark Office denied the Request for a Certificate of Correction under the provision of CFR §1.322. A copy of the Communication is enclosed. In the Communication, it states that inspection of the application reveals that PCT/US00/10665, April 19, 2000, is pending in the oath of declaration [sic] and it is printed in accordance with the record. This statement is not understood. Attached is a copy of the Declaration that was submitted in response to a missing parts which clearly shows that

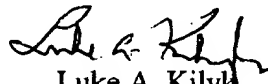
Letter in Response to the Request for Certificate of Correction
U.S. Patent No. 6,939,566 B2
U.S. Patent Application No. 09/761,561

PCT/US00/10665 was filed on April 19, 2000. However, the printed patent does not state this date.

As indicated in the Request for Certificate of Correction, the date set forth in the issued patent was April 20, 1999. The date should read April 20, 2000. A copy of the two pages of the granted patent with the noted errors circled is enclosed. Thus, the U.S. Patent and Trademark Office is requested to issue the Certificate of Correction as requested. Should the U.S. Patent and Trademark Office disagree, the Certificate of Corrections Branch is requested to contact the undersigned by telephone.

Since these errors are the fault of the United States Patent and Trademark Office, it is respectfully submitted that no fee is required for this request. However, if there are any fees due in connection with this filing, please charge our Deposit Account No. 50-0925.

Respectfully submitted,


Luke A. Kilyk
Reg. No. 33,251

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Enclosures: PTO Communication received October 17, 2005

Copy of Declaration

Two pages of Patent No. 6,939,566 B2



US006939566B2

(12) **United States Patent**
Batareseh et al.

(10) **Patent No.:** **US 6,939,566 B2**
(45) Date of Patent: **Sep. 6, 2005**

(54) **MICROBICIDAL FORMULATIONS AND METHODS TO CONTROL MICROORGANISMS**

(76) **Inventors:** **Kareem I. Batareseh**, 8610 Larkview La., Fairfax Station, VA (US) 22039;
Marwan Al-Kayed, P.O. Box 18, Naur (JO)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 77 days.

(21) **Appl. No.:** **09/761,561**

(22) **Filed:** **Jan. 17, 2001**

(65) **Prior Publication Data**

US 2003/0035848 A1 Feb. 20, 2003

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/294,143, filed on Apr. 20, 1999, now Pat. No. 6,242,009, and a continuation-in-part of application No. PCT/US00/10665, filed on Apr. 20, 1999. **2000**

(51) **Int. Cl.** **A01N 59/00; A01N 33/00**

(52) **U.S. Cl.** **424/618; 424/613; 424/614; 424/616; 424/617; 424/620; 424/621; 424/622; 424/625; 424/626; 424/627; 424/629; 424/630; 424/638; 424/639; 424/641; 424/644; 424/646; 424/649; 424/650; 424/652; 424/654; 424/655; 424/682; 424/702; 424/DIG. 6; 514/492; 514/493; 514/494; 514/495; 514/497; 514/498; 514/499; 514/500; 514/501; 514/504; 514/505; 514/553; 514/554; 514/557; 514/561; 514/635; 514/706; 514/714; 514/724**

(58) **Field of Search** **424/618, 613, 424/614, 616, 617, 620, 621, 622, 625, 626, 627, 629, 630, 638, 639, 644, 641, 646, 649, 650, 652, 654, 655, 682, 702; 514/492, 493, 494, 495, 497, 498, 499, 500, 501, 504, 505, 553, 554, 557, 561, 635, 706, 714, 724**

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Poddymov et al., Study of the complexing of silver (I) with some amino acids. Zh. Neorg. Khim. 1997, vol. 22, No. 6, pp. 1617-1620.

(Continued)

Primary Examiner—S. Mark Clardy

Assistant Examiner—Frank Choi

(74) **Attorney, Agent, or Firm**—Kilyk & Bowersox, PLLC.

(57) **ABSTRACT**

Microbicidal formulations are described which are preferably ecologically friendly and non-toxic to mammals, and are highly effective against a broad spectrum of detrimental pathogenic microorganisms. The microbicidal formulation contains complexes having the formula R-M, wherein R is at least one organic chelating moiety and M is at least one metal ion which is microbicidal to at least one microorganism. These complexes can disrupt microorganism activities by penetrating the natural protecting bio-films of such microorganisms through the reaction of the R-group with the organic constituents of these microorganisms while releasing M into their intra-cellular media. Thus, this process exhibits its biocidal activities from the inside-out, contrary to other methods which rely on damaging the protective biofilms. These microbicidal formulations can be diluted in suitable proportions into aqueous systems to produce the desired dosages for each individual case, depending on the level and the severity of the contamination. The microbicidal formulations can be applied by conventional methods, e.g., spraying, soaking, fogging, impregnation, and the like. The formulations can also be used as preservatives, such as for fresh or cut flowers and plants. These microbicides can also be made as gel or solids in different forms by using techniques available to those skilled in the art.

27 Claims, 4 Drawing Sheets

US 6,939,566 B2

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MICROBICIDAL FORMULATIONS AND METHODS TO CONTROL MICROORGANISMS

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of U.S. patent application Ser. No. 09/294,143, filed Apr. 20, 1999 now U.S. Pat. No. 6,242,009, and also is a continuation-in-part of International Patent Application No. PCT/US00/10665 filed Apr. 20, 1999, both incorporated herein in their entirety by reference.

FIELD OF THE INVENTION

The present invention relates in general to controlling microorganisms and more particularly relates to microbicides which are preferably environmentally friendly and non-toxic to mammals and which are highly effective against viruses, amoebae, bacteria (both gram-negative and positive), fungi, algae, spores, and the like. The present invention specifically relates to organo-metallic microbicidal formulations; their microbicidal applications, and methods of preparation.

BACKGROUND OF THE INVENTION

Water is the most important element of life since it comprises almost 80% of the human body. In addition, food hygiene depends solely on water, and therefore contamination of water is a common vehicle for the transport of epidemic diseases to humans like Typhoid, food poisoning, and Dysentery. For example, Psychrophilic bacteria's presence in the micro-flora in water can affect refrigerated food and spoil it. Hence, water contamination cannot be overlooked and extreme measures should be taken to assure a high quality of water to sustain life.

With the advent of technology, clean water is becoming a scarce commodity. Water contamination is unequivocally becoming a worldwide problem with unknown ramifications, and billions of U.S. dollars are spent annually to improve its quality. Contamination of waters is not only restricted to industrialized countries, but includes developing nations as well. Therefore, there is an immediate need to find poignant solutions to maintain and preserve water sources.

Recently, there has been a growing interest among scientists and engineers to develop new water and food disinfectant technologies to clean water from dangerous microorganisms. Various methods have been employed which are divided into two categories; namely, physical, chemical, or both. The physical category is represented by techniques utilizing ultrafiltration, reverse osmosis, radiation, freezing, heating, and ultrasound. Although these methods have proved to be effective, the drawbacks include the large electricity requirements and expensive equipment. On the other hand, the chemical category relies on the use of chemical adjuvants which exhibit biocidal properties such as aldehydes, phenols, alcohol, potassium permanganate, and chlorine and certain chlorine containing compounds. Some of these chemicals have many disadvantages associated with them and are now considered poisonous compounds. For instance, people coming into contact with these substances can develop skin irritation and suffer from long time illnesses which in some cases can be fatal; not to mention the unpleasant taste and odor associated with these chemicals. In addition, formation of mutagenic and carcinogenic

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agents, and genetic resistance are also some of their disadvantages. Notwithstanding, such compounds have afforded a way to battle these harmful microorganisms and their effectiveness have been unequivocally demonstrated.

Other methods have relied upon the use of ultra-violet irradiated silver fluoride solutions containing silver as a source of germicide activities, such as U.S. Pat. No. 3,422, 183, incorporated herein in its entirety by reference. However, such techniques require expensive equipment and large amounts of electricity.

Hydrogen peroxide is a strong oxidizing agent, and it has been used for the past 40 years as a disinfectant. Its main advantage is that it does not produce toxic residue or by-products. It has been used ubiquitously as an indirect food additive, as a disinfectant in hospitals, as a decontamination and purification agent of industrial waste water, and as a cleaning agent for exhaust air. Nonetheless, it decomposes readily to form water and oxygen, and has high sensitivity to sunlight and UV rays. Therefore, it is not suited for long-term use since recontamination cannot be circumvented.

In 1880, the Swiss botanist Carl van Nageli observed that highly diluted silver solutions have an algicidal effect. To describe this effect he coined the term "Oligodynamic". Colloidal silver, which is a pure, all-natural substance consisting of sub-microscopic clusters of silver ions held in suspension in de-ionized water by tiny positive charges on the silver ions, is a powerful prophylactic antibiotic which was used for years with no known side effects. It acts as an inhibitor disabling particular enzymes which bacteria, fungi, and viruses used in their mode of metabolism.

Based on this oligodynamic property, U.S. Pat. No. 4,915, 955, incorporated in its entirety herein by reference, combines the germicidal effects of hydrogen peroxide with silver, an inorganic acid, and an organic stabilizer at concentrations of 10-35 mg/l against many forms of bacteria and viruses. The process is based on silver ions, with the aid of hydrogen peroxide, damaging the protective biofilms of these microorganisms. Hence, this method depends solely on killing germs intercellularly. Accordingly, there is a need to develop a new generation of microbicidal agents that overcome one or more of the above-described disadvantages.

SUMMARY OF THE INVENTION

The present invention relies on using metal ions (M). A chemical matrix or complex is formed wherein these metal ions are attached to an organic-chelating moiety (R), to be used in stoichiometric amounts or more to form complexes, which serves as carriers for M into the intra-cellular medium of such microorganisms. These concentrated complexes can then be mixed with water to form suitable disinfectants. This process is different from previous methods found in the literature where the metal ion remains freely suspended in solution.

A particularly useful application of the disinfectant of the present invention is in the preservation of flowers and plants, as a general disinfectant, sterilization of articles and surfaces and areas, including, but not limited to, food, liquids, (e.g., water, beverages), animal feed, pharmaceuticals, hospitals, surgical equipment, swimming pools, saunas, fish, poultry, cattle, and other farming uses, and the like.

It is to be understood that the preceding general discussion and the discussion which follows are considered explanatory and exemplary in nature, and are solely intended to give additional merits of the current invention, as claimed.

Docket No. 3731-002

KILYK & BOWERSOX, P.L.L.C.

Declaration for U.S. Patent Application

As a below named inventor(s), We hereby declare that:

Our residence, post office address and citizenship are as stated below next to my name.

We believe we are the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **MICROBICIDAL FORMULATIONS AND METHODS TO CONTROL MICROORGANISMS**, the specification of which is attached hereto unless the following is checked

☒ was filed on January 17, 2001, as United States Application Number 09/761,561 and was amended on _____ (if applicable).

We hereby state that We have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above.

We acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

We hereby claim foreign priority benefits under Title 35, United States Code, § 119 (a) - (d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application for which priority is claimed:

(List prior foreign applications. See note A on Back of this Page)	_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	Priority Claimed ___ Yes ___ No
	_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	___ Yes ___ No
	_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	___ Yes ___ No

(See note B on back of this page)

___ See attached list for additional prior foreign applications

We hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, We acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

(List Prior U.S. Applications)	<u>09/294,143</u> (Appln. Serial No.)	<u>April 20, 1999</u> (Filing Date)	<u>Pending</u> (Status: Patented, Pending, Abandoned)
	<u>PCT/US00/10665</u> (Appln. Serial No.)	<u>April 19, 2000</u> (Filing Date)	<u>Pending</u> (Status: Patented, Pending, Abandoned)
	_____ (Appln. Serial No.)	_____ (Filing Date)	_____ (Status: Patented, Pending, Abandoned)

We hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

Luke A. Kilyk, Reg. No. 33,251 and Leonard D. Bowersox, Reg. No. 33,226.

Please direct all communications to the following address:

KILYK & BOWERSOX, P.L.L.C.
53A Lee Street
Warrenton, VA 20186
Telephone No. (540) 428-1701
Facsimile No. (540) 428-1720

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Title 18 of the United States Code, § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.
(See note C above)

Full name of first inventor (given name, family name) Kareem I. BATARSEH

Inventor's signature: [Signature] Date: May 10, 2001
Residence: 8610 Larkview Lane Citizenship: Jordanian
Post Office Address: Fairfax Station, VA 22039

Full name of second inventor (given name, family name) Marwan Al-KAYED

Inventor's signature: [Signature] Date: May 10, 2001
Residence: P.O. Box 18 - 11710 Naur Citizenship: Jordanian
Post Office Address: Jordan

Full name of third inventor (given name, family name) _____

Inventor's signature: _____ Date: _____
Residence: _____ Citizenship: _____
Post Office Address: _____

Full name of fourth inventor (given name, family name) _____

Inventor's signature: _____ Date: _____
Residence: _____ Citizenship: _____
Post Office Address: _____

OCT 17 2005

KILYK & BOWERSOX, PLLC.



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
ASSISTANT SECRETARY OF COMMERCE AND
COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, DC 20231

Patent No. : 6939566 B2
Inventor(s) : BATARSEH
Issued : 9/6/05
Title : MICROBICIDAL FORMULATIONS AND METHODS TO CONTROL
MICROORGANISMS
Atty.doc./File No.

Request for Certificates of Correction

Consideration has been given to your request for the issuance of a Certificate of Correction, for the above – identified patent under the provisions of CFR 1.322.

Inspection of the application for the patent reveals that PCT/US00/10665 Apr.19,2000 is pending in the oath of declaration and it is printed in accordance with the record. Therefore being no fault on the Patent and Trademark Office, It has no authority to issue a certificate of correction under the provision of 1.322.

In view of the forgoing, your request in this matter, is hereby denied.

Future written correspondence concerning this matter should be filed and directed to Decisions & Certificates of Correction Branch.

Henry Randall
Cecelia Newman
Decisions & Certificates
of Correction Branch
(703) 308-9390 Ext. 108

LUKE A. KILYK
400 HOLIDAY COURT, SUITE 102
WARRENTON, VA 20186

HR/CBN

Docketed

Due Date _____

Dkt No 3731-002

By JMB

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KILYK & BOWERSOX, P.L.L.C.

U.S. Patent No. 6,939,566 B2

U.S. Pat. Appln. No.: 09/761,561

Docket No. 3731-002

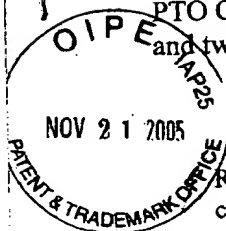
Filed: January 17, 2001

Applicant: BATARSEH et al.

Entitled: MICROBICIDAL FORMULATIONS AND METHODS TO CONTROL
MICROORGANISMS

Papers filed herewith on: November 18, 2005

Letter in Response to the Request for Certificate of Correction, copy
PTO Communication received October 17, 2005, copy of Declaration,
and two pages of issued Patent No. 6,969,566 B2.



VIA FIRST CLASS MAIL
COMMISSIONER OF PATENTS

Receipt is hereby acknowledged of the papers filed as indicated in
connection with the above-identified case

LAK/khb

Docketed

Due Date _____

Dkt No 3731-002

By JMB